SECTION 716
BITUMINOUS DAMPPROOFING AND WATERPROOFING MATERIALS

This Section covers bituminous primer and mop coats for use, when specified, in dampproofing and waterproofing below or at ground level, for application to concrete and masonry surfaces.

716.01. ASPHALT PRIMER.

Asphalt primer for use with asphalt for waterproofing or dampproofing shall meet the requirements of ASTM D 41. Furnish Type D certification for the asphalt primer in accordance with Subsection 106.04.

716.02. CREOSOTE PRIMER.

Creosote primer for use with tar for waterproofing shall meet the requirements of ASTM D 43. Furnish a Type D certification for the creosote primer in accordance with Subsection 106.04.

716.03. ASPHALT CEMENT.

Asphalt cement for waterproofing or dampproofing shall meet the requirements of ASTM D 449, type II. Furnish a Type D certification for the asphalt cement in accordance with Subsection 106.04.

716.04. COAL-TAR PITCH.

Coal-tar pitch for waterproofing shall meet the requirements of ASTM D 450. Furnish a Type D certification for the coal-tar pitch in accordance with Subsection 106.04.

SECTION 717
MISCELLANEOUS WATERPROOFING MATERIALS

717.01. ASPHALT FELT.

Asphalt felt for use in the membrane system of waterproofing shall meet the requirements of ASTM D 226. Furnish a Type D certification for the asphalt felt in accordance with Subsection 106.04.

717.02. BITUMINOUS TREATED FABRIC.

Bituminous treated fabric for use in the membrane system of waterproofing shall meet the requirements of ASTM D 173. Furnish a Type D certification for the bituminous treated fabric in accordance with Subsection 106.04.

717.03. PLASTIC CEMENT.

(a) **Description.** Plastic cement shall be composed of semi-solid asphalt dissolved in a suitable volatile solvent and stiffened with a mineral filler consisting essentially of short, incombustible, mineral fibers.

(b) **General Requirements.** The asphalt forming the base of the plastic cement shall be refined petroleum asphalt with a penetration at 77°F (25°C) of 30-70. The mixture shall meet the following requirements:

Asphalt, %, minimum	38
Mineral Filler, %, minimum	25
Petroleum Solvent, %, maximum	25

Plastic cement shall be of such consistency that it can be spread readily with a trowel without drawing or pulling, or can be extruded through a suitable nozzle under a minimum pressure of 50 psi (345 kPa).

When applied in a layer 1/16 to 1/8 inch (1.6 to 3.2 mm) thick, plastic cement shall set within 24 hours to a tough plastic coating free from blisters.

After drying for 72 hours, a patch of plastic cement 1/16 to 1/8 inch (1.6 to 3.2 mm) thick, applied to the material upon which it is to be used, shall not blister or sag more than 1/4 inch (6.4 mm) upon exposure at a temperature of 140°F (60°C) for 5 hours.

After drying for 72 hours and exposure at a temperature of 140°F (60°C) for 5 hours, a patch of cement 1/16 to 1/8 inch (1.6 to 3.2 mm) thick shall be plastic and adhere well to fabric, saturated felt, metal, or concrete, upon exposure at a temperature of 32°F (0°C) for one hour.

After drying for 24 hours and exposure at a temperature of 140°F (60°C) for 24 hours, and then cooling to a temperature of 70°F to 77°F (21°C to 25°C), a patch of the cement 1/16 to 1/8 inch (1.6 to 3.2 mm) thick shall not crack or break from the saturated fabric, saturated felt, or metal, when bent over a mandrel 1 inch (25.4 mm) in diameter.

717.04. INSULATING PAPER.

Insulating paper shall be a waterproof paper 36 inches (914 mm) wide, having a weight (mass)/unit volume not less than 10 lb/100 ft^2 (488 g/m^2). Furnish a Type D certification for the insulating paper in accordance with Subsection 106.04.

717.05. BUTYL RUBBER MEMBRANE.

(a) **Description.** This Subsection covers type E butyl rubber membrane for use in waterproofing railroad bridges.

(b) **Butyl Rubber.** The membrane shall be 1/16±1/64 inch (1.6 ± 0.4 mm) thick. It shall be single layer of compounded butyl elastomer of the IIR family (Iso butyl-Isoprene Rubber), complying with Chapter 29, part 2 of the current AREA Specifications.

(c) **Adhesive.** The rubber-based bonding adhesive shall be compatible with the butyl membrane and with the material to which it is bonded and shall remain elastic at -40°F (-40°C) and above.

(d) **Cement.** Cement for splicing shall be a butyl compound of self-vulcanizing butyl rubber with not less than 30-percent solids.

(e) **Tape.** Butyl gum tape for splices shall be of black, unvulcanized butyl rubber with an 0.008 inch (0.20 mm) thick polyethylene backing. It shall be 0.030±0.004 inch (0.76 ± 0.10 mm) thick, including the backing.

(f) **Shop Drawings.** Furnish 5 copies of shop drawings for the approval by the Engineer and railway company and obtain such approval before proceeding with the work. These drawings shall show

extent, sizes, and complete details of the membrane waterproofing, including detailed installation instructions.

(g) **Certification.** Furnish a type D certification for the materials specified above in accordance with Subsection 106.04.

SECTION 718

PREMOLDED ASPHALT PLANK

718.01. ASPHALT PLANK.

(a) **Description.** This Subsection covers asphalt plank for use on railroad bridges.

(b) **General Requirements.** Premolded asphalt plank shall conform to the requirements of the current AREA Specifications, Chapter 29, Part 2, Section B, Article 4g.

SECTION 719

SIGNS

Description. This Section establishes the requirements for materials for signs in Section 850.

719.01. PANELS.

(a) **Aluminum.**

1. ***Sheet Aluminum.*** Sheet aluminum signs shall be ASTM B 209 alloy 6061-T6 or 5052-H38 with mill finish. Thickness, dimensions, hole sizes, and hole locations shall be shown on the Plans. All panels shall be flat and straight within commercial tolerances established by the aluminum industry.

Sheet aluminum signs shall be treated with a chromate type chemical conversion coating in accordance with ASTM B 449, Class II.

2. ***Extruded Aluminum.*** Extruded aluminum panel signs shall be ASTM B 221 alloy 6063-T6. Thickness, dimensions, hole sizes and hole locations shall be as shown on the Plans. All panels shall be flat and straight within commercial tolerances established by the aluminum industry. The extruded aluminum shall be free of corrosion, white rust, and dirt.

Type A edge strip shall be aluminum ASTM B 221 alloy 6063-T6. Aluminum type B sheet metal screws with slotted pan heads shall be placed on 24 inch (609.6 mm) centers maximum to secure the edge strips to the sign panels. On signs with width of 36 inches (914.4 mm) or less, a minimum of three screws shall be used.

(b) **Sign Faces.** All sign faces are to be made in accordance with the detailed drawings as shown in the latest revision of the Manual on Uniform Traffic Control Devices for Streets and Highways, and/or as shown on the Plans.

(c) **Basis of Acceptance.** A type A or B certification is required for acceptance of sign panels, extrusions, and shapes covered in this Section.